Communicable Disease Report

Hawai'i Department of Health
Communicable Disease Division

May/June 1999

Rotavirus Vaccine for the Prevention of Rotavirus Gastroenteritis Among Children

An oral, live rotavirus vaccine was licensed by the United States Food and Drug Administration on August 31, 1998 for use among infants. On March 19, 1999, the Advisory Committee on Immunization Practices (ACIP) issued their recommendations for the use of this vaccine for the prevention of rotavirus gastroenteritis among children.[1] The following is a summary of the ACIP recommendations.

Clinical and Epidemiologic Features of Rotavirus Disease

Rotavirus infection is the most common cause of severe gastroenteritis in the U.S. and worldwide. Virtually all children become infected in the first three to five years of life, but severe diarrhea and dehydration occur primarily among children aged three to 35 months.

Rotavirus appears to be responsible for approximately five to 10% of all diarrheal episodes among children aged less than five years in the U.S., and for a much higher proportion of severe diarrheal episodes. Annually in the U.S., rotavirus gastroenteritis accounts for more than 500,000 physician visits, and approximately 50,000 hospitalizations and 20 deaths in children less than five years.

Rotaviruses are transmitted by the fecal-oral route, both through close person-to-person contact and through fomites. Rotaviruses might also be transmitted through other modes, such as respiratory droplets. Children can be infected with rotavirus several times during their lives, however initial infection after age three months is most likely to cause severe diarrhea and dehydration. After a single natural infection, 40% of children are protected against any subsequent infection with rotavirus. Second, third, and fourth infections confer progressively greater protection.

Reasons for Rotavirus Infant Immunization

Several reasons exist to adopt immunization of infants as the primary public health intervention to prevent rotavirus disease in the U.S.:

1) Similar rates of illness among children in industrialized and less developed countries indicate that clean water supplies and good hygiene have not decreased the incidence of rotavirus infection in developing countries, so further improvements in water or hygiene are unlikely to have a substantial impact.
2) In the U.S., a high level of rotavirus morbidity continues to occur, despite currently available therapies, such as oral rehydration solutions.
3) Immunization early in life should prevent most cases of severe rotavirus diarrhea and its sequelae (i.e. dehydration, physician visits and hospitalization).

Rotavirus Vaccine

The licensed rhesus-based rotavirus vaccine-tetravalent (RRV-TV), produced by Wyeth-Lederle Vaccines and Pediatrics under the name RotaShield™ is a live, oral vaccine. It incorporates a rhesus rotavirus strain with three single-gene human-rhesus reassortants. RRV-TV is supplied as a lyophilized pink solid. Because the vaccine strains are acid-labile, RRV-TV is reconstituted with 2.5 ml of irradiated sterile diluent containing citrate-bicarbonate. Trace amounts of fetal bovine serum, neomycin sulfate and amphotericin B are present in the vaccine. The lyophilized vaccine and diluent may be refrigerated at temperatures between 36° F and 45° F, **but should not be frozen.** Once reconstituted, the vaccine is stable for up to 60 minutes at room temperature and up to four hours at refrigeration temperature, after which the reconstituted product must be discarded.

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Cat Scratch Disease: A Review

Background

Cat scratch disease (CSD) is common in Hawai`i. The causative organism is a Gram-negative bacterium *Bartonella henselae,* formerly known as *Rochali - maea henselae. B. henselae* bacteremia occurs in flea-infested, well-appearing kittens usually less than one year old, and less commonly in older cats. The organism is transmitted among cats by the cat flea; it is transmitted to humans by a cat scratch, bite or other intimate contact.

Typical CSD

CSD occurs as both typical and atypical disease.[1] Typical CSD in an immunocompetent host is manifested by a characteristic and highly predictable clinical course. In nearly all cases patients give a history of a scratch, bite, contact or intimate association with a cat, most often a newly acquired kitten. Typically a round, red-brown, nontender papule develops in the scratch line after three to 10 days. It may vary in size from one to several millimeters (mm) and may persist for a few days to as long as two to three weeks. In the following one to two weeks one or more regional lymph nodes that drain the area gradually enlarge. The most commonly involved lymph nodes are the anterior cervical, axillary, inguinal, femoral, preauricular, supraclavicular, and epitrochlear nodes. However any node can be involved if it is in the path of lymphatic drainage from a site that has been inoculated with *B. henselae.*

CSD lymph nodes tend to be large with an average diameter of four to six centimeters (cm) at the time of maximum size, but can be as large as 10-13 cm. After one to two weeks of enlarging, they remain the same size for two to three weeks and then resolve over an additional period of two to three weeks. Although most of the nodes may be moderately tender, some are nontender. The usual course of the disease is two to three months. Some cases are more severe and more protracted, and may last up to six to seven months.

Most patients with typical CSD remain afebrile and are not ill-appearing. Some patients experience anorexia, malaise, headache, arthralgia, and abdominal, neck, back or extremity pain. In contrast to pyogenic lymphadenopathy, which may develop suddenly, CSD lymphadenopathy rarely develops overnight. Yet it is unlikely to have been present for more than three months prior to presentation. In our experience, most patients with CSD tend to seek medical care after lymphadenopathy has been present for seven to 14 days. CSD lymphadenopathy is unilateral and isolated to a regional group of lymph nodes in immunocompetent patients. Therefore, if a patient has disseminated lymphadenopathy, or bilateral lymphadenopathy, a diagnosis other than CSD should be sought.

Late in the course of illness in about 10% of patients, the node(s) develop an overlying erythema and fluctuation, and may suppurate if they are not drained. Needle aspiration usually provides satisfactory drainage for suppurative CSD. If fluctuance recurs, the nodes may require open surgical drainage. The incision should be left open to close by secondary intention. Chronic draining fistulous tracts do not develop in CSD.

Diagnosis

CSD can be diagnosed reliably with serologic testing. In a seroepidemiologic study of CSD in Hawaii, Demers et al. at Tripler Army Medical Center[2] applied rigid criteria for the clinical diagnosis of CSD. All 38 patients had positive IFA serology (sensitivity 100%), and only one of 48 controls with no direct cat exposure in the previous two years had positive serology (specificity 98%). These tests were performed by the Centers for Disease Control and Prevention (CDC). In this study, 24 of 38 (84%) had positive titers in their initial serum samples obtained one to two weeks after onset of clinical CSD; the other six (16%) developed positive titers in convalescent samples obtained four to eight weeks later.

Prior to the development of a confirmatory serologic test for CSD, intradermal skin testing was used for the diagnosis of CSD. However with the development of specific laboratory tests to confirm the diagnosis, the CSD skin test is no longer recommended. It is less sensitive, less specific, poorly standardized, not readily available, not approved by regulatory authorities, and considered by some to be unsafe.

Treatment

Typical CSD is a self-limited disease in immunocompetent hosts and will usually resolve spontaneously in one to three months. Recently the first double-blind placebo-controlled antibiotic trial for treatment of CSD was reported by clinicians at Tripler Army Medical Center.[3] Lymph node volume was measured by clinical measurement and by ultrasonography. This study showed that seven of

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Rabies Prevention: A Review

Rabies is a viral infection transmitted in the saliva of infected mammals that causes a encephalomyelitis, which is almost always fatal. New Advisory Committee on Immunization Practices (ACIP) recommendations for human rabies prevention were recently published in the January 8, 1999 issue of the Morbidity and Mortality Weekly Report.[1] The new ACIP recommendations supersede those published in 1991.

Transmission

Rabies is transmitted only when the virus is introduced into bite wounds, open cuts in skin or onto mucous membranes. Evaluation of possible exposures for rabies is complex and best be accompanied by consultation with Department of Health (DOH) personnel. Considerations in evaluating possible exposures should include:

- The incidence of the disease, which varies by country, region and animal species;
- The animal species likely to transmit rabies vary by geographical area;
- Most cases of rabies are transmitted by biting carnivorous mammals and bats in a rabies endemic area (biting wild carnivores and bats are considered rabid unless proven negative by laboratory tests in rabies endemic areas, while bites by rodents and lagomorphs [rabbits and hares] almost never require postexposure prophylaxis);
- A rabies exposure is more likely to have occurred if the incident is unprovoked; and
- Unvaccinated biting dogs and cats in rabies endemic areas, or those whose vaccination status is not current, are more likely to transmit the disease than those with current vaccinations.

Prophylaxis

Postexposure prophylaxis is recommended for people likely to have been exposed to rabies, or when the biting animal's health status cannot be ascertained. Immediate and thorough wound cleansing with soap and water and a virucidal agent is an important measure for preventing rabies. On the first day of treatment, one dose of human rabies immune globulin (HRIG) is administered at a dose of 20IU/kg body weight. As much of the dose as possible should be infused in the area around and into the wound. Five doses of a 1.0 ml. FDA-approved rabies vaccine are administered intramuscularly in the **deltoid** on days 0,3,7,14 and 28.

Preexposure prophylaxis is recommended for persons in high-risk groups, such as veterinarians, animal handlers, certain laboratory workers and those whose activities (including international travelers) bring them into frequent contact with rabies virus or potentially rabid animals. Three intramuscular doses of a 1.0 ml. rabies vaccine or a 0.1 ml. intradermal rabies vaccine are administered on days 0,7 and 21 or 28. Persons who have completed preexposure immunization and are subsequently exposed to rabies receive two doses of 1.0 ml. rabies vaccine intramuscularly on days 0 and 3. No HRIG is administered to previously immunized people.

Available Vaccines

There are three rabies vaccines licensed in the United States: Human diploid cell vaccine (HDCV), Rabies vaccine absorbed (RVA) and Purified chick embryo cell vaccine (PCEC). All are designed to be administered intramuscularly. A 0.1 ml intradermal dose of HDCV for preexposure prophylaxis is also available.

Changes in the ACIP

The primary changes in the new ACIP recommendations include:

- There are three licensed vaccines available for use in the United States;
- When beginning postexposure prophylaxis, if anatomically feasible, the full dose of HRIG should be thoroughly infiltrated in the area around and into the wounds. Any remaining volume should be injected intramuscularly at a site distant from vaccine administration. Previous ACIP recommendations indicated that up to one half of the dose be infused into and around the wound site, and the other half given in the gluteus;
- Postexposure prophylaxis should be considered when direct contact between a person and a bat has occurred, even when a bite, scratch or mucous membrane exposure was not apparent. Of 27 human rabies cases that occurred in the United States since 1990, 20 (74%) were attributed to bats, with a definitive history of a bat bite being established for only one of these cases;[2]
- Evaluation of ferret bites is handled in the same manner as biting dogs and cats, namely confining and observing the animal for 10 days for signs of rabies; and
- Guidelines are provided for management of people who have started or completed postexposure prophylaxis while travelling outside the United States. When travelers are bitten by a potentially rabid animal in a rabies endemic country, it is important that the patient seek care at the most reputable medical clinic in the area. This may mean going to the capital city or to another country. If necessary, the U.S. Embassy in that country should be contacted for advice on rabies postexposure prophylaxis.

Rabies and Hawai`i

The State of Hawai`i is the only state considered to be rabies-free. Rabies has never been diagnosed in a resident animal or person. However in 1991, a rabid bat was found in a recently arrived shipping container from Oakland, California carrying three new automobiles.[3] The animal was captured while still in the container.

The Hawai`i State Department of Agriculture (DOA) maintains a 120 day quarantine on all incoming dogs and cats to prevent the entry of rabies. A 1997 program change allows a 30 day quarantine for those animals meeting specific pre-

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The Centers for Disease Control and Prevention Internet Website

The U.S. Centers for Disease Control and Prevention (CDC) internet website provides a wealth of health resources and information. This outline provides a brief description of some of the information available from their website at **http://www.cdc.gov.**

The primary publication of the CDC is the Morbidity and Mortality Weekly Report (MMWR), which summarizes national health and disease information. An electronic (e-mail) subscription to either the MMWR Table of Contents or the entire publication is free. Each issue is also available on the internet at **http://www2.cdc.gov/mmwr.** In addition, the MMWR periodically issues Recommendations and Reports, also available at **http://www2.cdc.gov/mmwr/mmwr_rr.html.** The most recent issue of Recommendations and Reports was dated June 4, 1999 (Vol. 48, No. RR-7) entitled "Recommendations for the Use of Lyme Disease Vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP)." Also, periodic Surveillance Summary issues are published may be accessed at **http://www2.cdc.gov/mmwr/mmwr_ss.html.** The most recent issue of a Surveillance Summary was dated April 16, 1999 (Vol 48, No. SS-2) entitled "Surveillance for AIDS-Defining Opportunistic Illnesses, 1992-1997."

Other subjects of possible interest also available from the MMWR web page include:

- International Bulletins,
- Disease Trends, and
- Straight Facts on Diseases.

The CDC also publishes a quarterly peer-reviewed journal entitled Emerging Infectious Diseases, which is available at **http://www.cdc.gov/ncidod/eid/index.htm.**

In addition to their regular publications, the following is a summary of some of the health-related information available through their website:

- Travelers health at **http://www.cdc.gov/travel/index.htm,**
- Health Information at **http://www.cdc.gov/health/diseases.htm,**
- Data and Statistics at **http://www.cdc.gov/scientific.htm,**
- Publications, Software and Other Products at **http://www.cdc.gov/publications.htm.** which include a Public Health Image Library, Public Health Training Network Catalog and the National Center for Health Statistics publications,
- Prevention Guidelines at **http://aepo-xdv-www.epo.cdc.gov/wonder/PrevGuid/PrevGuid.htm,** and
- National Immunization Program at **http://www.cdc.gov/nip/.**

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Rabies Prevention

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requisites. These include:

- Two rabies vaccinations administered a minimum of six months apart, the second given not more than 12 months or less than 90 days prior to arrival;
- A microchip from the DOA implanted in the animal; and
- A serologic blood test administered no more than 12 months and no less than 90 days prior to arrival with a titer at or above a specified level.

A second blood test is administered following the animal's arrival. Entering animals not meeting the prerequisite requirements or those whose post-arrival antibody titers are below a specified level are quarantined for 120 days.

Department of Health Services

The DOH assists physicians in evaluating possible rabies exposures. It also assists physicians in obtaining the necessary rabies prophylactic products, through borrowing doses of vaccine and HRIG, to facilitate immediate postexposure prophylaxis. There are two local sources of rabies prophylactic products; Kaiser-Honolulu Clinic and Tripler Army Medical Center. Vaccines and HRIG ordered directly from the distributing pharmaceutical firms are air-freighted to the physician's address. In recent years, 5-15 individuals annually in Hawai`i have received rabies postexposure prophylaxis for animal bite exposures occurring in rabies endemic areas.

Copies of the 1999 ACIP recommendations are available from the Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402-9325, Telephone: (202) 512-1800. It is also available on the internet at the Centers for Disease Control and Prevention web site at **http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00056176.htm.**

For more information and assistance with human rabies prophylaxis, please call the DOH Epidemiology Branch at (808) 586-4586 on O`ahu. For more information regarding the State's Animal Quarantine program, please call the DOA at (808) 483-7151 on O`ahu.

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[1] Centers for Disease Control and Prevention. Human rabies prevention - United States, 1999: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1999;48(No. RR-1):1-21.

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Rotavirus

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Recommendations for the Use of Rotavirus Vaccine

Routine Administration. Routine administration with three oral doses of RRV-TV is recommended for infants at ages two, four, and six months. RRV-TV vaccination can be initiated at any time between the ages of six weeks and six months, with second and third doses following the preceding dose by a minimum of three weeks. Vaccination should not be initiated for children aged ≥ seven months because these older infants might have an increased risk of fever occurring three to five days after receiving the first dose of vaccine. All doses of vaccine should be administered during the first year of life because data regarding the safety and efficacy of RRV-TV among children aged ≥ one year are lacking.

RRV-TV is recommended for children who are breastfed. RRV-TV may be administered together with DTaP (or DTP), Hib vaccine, OPV, IPV and hepatitis B vaccine. Like other vaccines, RRV-TV can be administered to infants with transient, mild illnesses, with or without low-grade fever.

Contraindications.

- Infants who have known or suspected immunodeficiency;
- Persons who have hypersensitivity to any component of the vaccine, or who have experienced an anaphylactic reaction to a previous dose of RRV-TV;
- Babies with acute, moderate to severe vomiting or diarrhea, until the condition resolves; and
- Infants with moderate to severe febrile illness.

Precautions & Special Situations

♦ Premature infants

Practitioners should consider the potential risks and benefits of vaccinating premature infants. The ACIP supports immunization of prematurely born infants if they are:

a) at least six weeks of age,
b) being or have been discharged from the hospital nursery, and are
c) clinically stable.

♦ **Exposure of Immunocompromised Persons to Vaccinated Infants**

Infants living in households with persons who have or are suspected of having an immunodeficiency disorder or impaired immune status can be vaccinated.

♦ **Recent Administration of Antibody-Containing Blood Products**

No restrictions are necessary regarding the timing of administering RRV-TV and antibody-containing blood products.

♦ **Preexisting Chronic Gastrointestinal Diseases**

Providers should consider the potential risks and benefits of administering RRV-TV to infants.

♦ **Regurgitation of Vaccine**

Practitioners should not readminister a dose of vaccine to an infant who regurgitates, spits out, or vomits during or after administration of vaccine.

♦ **Late or Incomplete Immunization**

Initial vaccination of children aged seven months or older or administration of any dose of RRV-TV to children on or after their first birthday is not recommended.

Adverse Events After Rotavirus Vaccination

The most common adverse event reported with RRV-TV is fever, usually occurring three to five days after administration. As with any new vaccine, rare adverse events might be identified when many more children are immunized, and postlicensure surveillance will be required to identify such rare events. Serious adverse events that occur after administration of RRV-TV should be reported to the Vaccine Adverse Events Reporting System (VAERS). VAERS reporting forms and information can be requested 24 hours a day by calling (800) 822-7967 or by accessing the VAERS WorldWide Web site at **http://www.cdc.gov/nip/vaers.htm.**

The Centers for Disease Control and Prevention are currently negotiating a contract with the manufacturer for the purchase of RRV-TV for the Vaccines for Children (VFC) program. Practitioners will be notified when RRV-TV is available through the VFC program.

The complete ACIP statement may be viewed, downloaded, and printed at the CDC's MMWR Web site, **http://www2.cdc.gov/mmwr/mmwr_rr.html.** For further assistance, please contact the Hawai`i Immunization Program's Officer of the Day on O`ahu at (808) 586-8332.

REFERENCE:

[1] Centers for Disease Control and Prevention. Rotavirus vaccine for the prevention of rotavirus gastroenteritis among children: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1999; 48 (No. RR-2),1-16.

Communicable Disease Report on the Internet

The Communicable Disease Report (CDR) is available on the Department of Health's home page on the internet. The home page address has been changed and is now **http://www.hawaii.gov/health.** For direct access to the CDR, the new address is **http://www.hawaii.gov/doh/resource/comm_dis/cdr.html.** You can also download the document in the **pdf** format from that site. Also available from the site are Communicable Disease reporting requirements and selected communicable disease fact sheets.

Hawai`i Immunization Program

Important Telephone Numbers

Program Manager
Lin Watson, R.N., M.S.N. 586-8331

Vaccines for Children Coordinator
Chuck Miller, M.A. 586-8311

Assessment and Technical Support Coordinator
Marcia Nagao, M.D., M.P.H. 586-8314

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Cat Scratch Disease

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14 (50%) azithromycin-treated patients had significant resolution of lymphadenopathy at 30 days compared to one of 15 (7%) of placebo-treated controls (p=0.026), as measured by ultrasonography. It should be noted that the two groups showed no difference in lymph node volume until the fourth week of treatment, and that clinical response at 30 days was only observed in 50% of patients in the azithromycin group. Therefore if a clinician makes a clinical diagnosis of CSD and elects to offer treatment with azithromycin, he or she should instruct the patient not to expect overnight resolution of symptoms. Azithromycin-treated patients have a 50% likelihood of having significant lymphadenopathy for two months or longer, despite treatment.

Atypical CSD

Primary care physicians should be familiar with the atypical forms of CSD as well as the typical form.

Parinaud's Oculoglandular Syndrome (POGS). A fairly common presentation of atypical CSD is Parinaud's oculoglandular syndrome (POGS), which consists of unilateral conjunctivitis with adjacent preauricular lymphadenopathy. The palpebral conjunctivae of the involved eye displays a characteristic granulomatous lesion that measures two to three mm to > one cm in diameter. Although POGS can be caused by other infections, including tuberculosis, tularemia, syphilis, and lymphogranuloma venereum, it has become well-established that POGS is a common form of atypical CSD.[1] Infection of the eye with *B. henselae* is contracted by inoculation of the organism indirectly into the eye, rather than by direct contact through a scratch, as in typical CSD. POGS is a predictable self-limited infection with a good outcome in essentially all cases.

Hepatosplenic CSD. Hepatosplenic CSD is an atypical form of CSD which occurs in immunocompetent patients who present with fever of unknown origin.[1,4] These patients have daily high fevers, often in the range of 104^{o}F, with some patients being febrile for a month before the diagnosis is made. Many of these patients complain of abdominal pain. In many cases, the care provider has neglected to ask about cat exposure until the patient has been febrile for several weeks. Physical examination is remarkably benign. Although these patients usually have a few well-healed cat scratch scars, these are often overlooked. About half of these patients have no lymphadenopathy. They do not have hepatosplenomegaly or jaundice, and liver function tests are usually normal. The erythrocyte sedimentation rate may be moderately elevated (40-70 mm/hr) but other screening laboratory tests are usually normal. Diagnosis is made by the presence of lytic lesions in the liver and/or spleen on ultrasound or CT scan, and positive *B. henselae* titers. Fever usually resolves within a day or two of starting treatment with an intravenous aminoglycoside. However the fever may not resolve for a month, even with adequate treatment.[1]

CSD Encephalopathy and Neuroretinitis. CSD encephalopathy (CSDE) was first reported in 1952 and has recently been extensively reviewed.[1] Convulsions occur in about one-half of cases, and may last from a few minutes to three to four hours, requiring intubation and intensive care. Another neurologic form of atypical CSD is a distinctive type of neuroretinitis, called Leber's stellate neuroretinitis. It presents with painless unilateral, rarely bilateral, loss of vision with central scotomata, optic disc swelling, macular star formation and complete recovery of vision within one to three months.[1]

Both CSDE and CSD neuroretinitis are unusual forms of atypical CSD and are not well known to the average clinician. Immunosuppressed patients with *B. henselae* infection may have widespread and occasionally fatal disease.[1] As these clinical syndromes become better known, along with confirmatory serologic tests, these and other atypical manifestations of CSD may become more widely recognized.

Clinicians at Tripler Army Medical Center have recently developed a protocol with the CDC to estimate the prevalence of CSD among the military population in Hawai`i, and would like to evaluate all active duty, dependent, or retired military patients with possible CSD. To refer military patients with possible CSD, call the Tripler paging operator at 433-5788 and ask for CPT Joe Turbyville, LTC Denise Demers, or COL Judy Vincent.

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[1] Bass JW, Vincent JM, Person DA. The expanding spectrum of *Bartonella* infections: II. Cat-scratch disease. *Pediatr Infect Dis J* 1997;16:163-79.

[2] Demers DM, Bass JW, Vincent JM, et al. Cat scratch disease in Hawaii: etiology and seroepidemiology. *J Pediatr* 1995;126:23-6.

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[4] Dunn MW, Berkowitz FE, Miller JJ, Snitzer JA. Hepatosplenic cat-scratch disease and abdominal pain. *Pediatr Infect Dis J* 1997;16:269-72.

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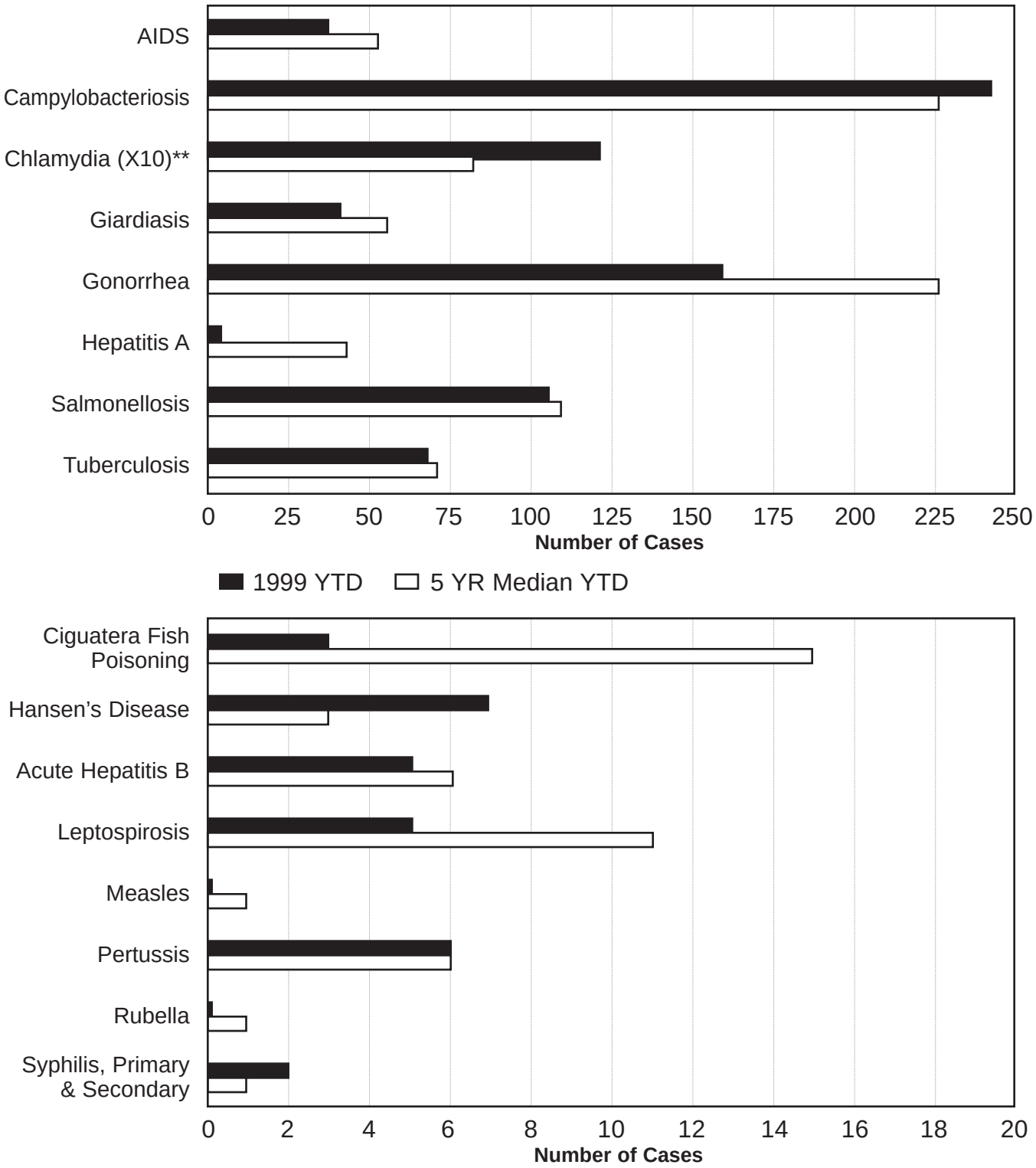
Communicable Disease Surveillance

Selected Diseases by Date of Report*
Hawai'i, 1999 Year-to-date Through May



* These data do not agree with tables using date of onset or date of diagnosis.
** The number of cases graphed represent 10% of the total number reported.